

IN THE CLAIMS

Q7 1. (Amended) An isolated polypeptide comprising a functional long chain polyunsaturated fatty acid (PUFA) elongase having a function of extending a chain length of an 18 carbon PUFA to 20 carbons in length.

Q8 3. (Amended) A polypeptide according to claim 1 wherein the polypeptide comprises a portion of the amino acid sequence shown in SEQ ID NO:15 or a variant thereof.

7. (Amended) A polypeptide according to claim 1 wherein the polypeptide sequence includes a sequence motif responsible for Endoplasmic Reticulum (ER)-retention.

Q9 8. (Amended) A polypeptide according to claim 1 wherein the polypeptide is capable of elongating palmitoleic acid (PA; 16:1 Δ^9) to vacceric acid (VA; 18:1 Δ^{11}).

Q10 9. (Amended) A polypeptide according to claim 1 wherein the polypeptide is an animal polypeptide.

16. (Amended) An isolated DNA molecule encoding a polypeptide according to claim 1.

17. (Amended) A DNA molecule according to claim 16 wherein the DNA molecule comprises the sequence shown in SEQ ID NO:7 or variants of that sequence due to base substitutions, deletions, and/or additions.

18. (Amended) An engineered organism engineered to express a polypeptide according to claim 1.

Q11 21. (Amended) An engineered organism containing a synthetic pathway for the production of a polypeptide according to claim 1.

Q12 23. (Amended) An engineered organism according to claim 21 wherein the pathway includes Δ^6 -fatty acid desaturase.

Q¹² 24. (Amended) An engineered organism according to claim 21 wherein the organism is a lower eukaryote.

27. (Amended) A transgenic plant engineered to express a polypeptide according to claim 1.

Q¹³ 28. (Amended) A transgenic plant containing a DNA molecule according to claim 16.

29. (Amended) A method of producing a PUFA comprising carrying out an elongase reaction catalysed by a polypeptide according to claim 1.

Q¹⁴ 32. (Amended) A PUFA produced by a method according to claim 29.

Q¹⁵ 35. (Amended) A pharmaceutical composition comprising a polypeptide according to claim 1.

37. (Amended) A pharmaceutical composition according to claim 35 wherein the composition comprises a pharmaceutically-acceptable diluent, carrier, excipient or extender.

Q¹⁶ 38. (Amended) A method of elevating the PUFA levels of an animal or a plant comprising the step of supplying to the animal or plant a polypeptide according to claim 1.

39. (Amended) A method according to claim 38 wherein the animal is a mammal.

40. (Amended) A method according to claim 39 wherein the mammal is a human.

41. (New) A pharmaceutical composition according to claim 36 wherein the composition comprises a pharmaceutically-acceptable diluent, carrier, excipient, or extender.

Q¹⁷ 42. (New) A method of elevating the PUFA levels of an animal or a plant comprising the step of supplying the animal or plant with a DNA molecule according to claim 16.

43. (New) A method of elevating the PUFA levels of an animal or a plant by supplying the animal or plant with a PUFA according to claim 32.